Space Physics Interactive Data Resource
SPIDR

User's guide

Version 1.0

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Contents

Introduction

The Space Physics Interactive Data Resource (SPIDR) is designed to allow a solar terrestrial physics customer to intelligently access and manage historical space physics data for integration with environment models and space weather forecasts. SPIDR is a distributed network of synchronous databases and 100% Java middle-ware servers accessed via the World Wide Web. By enabling easy data mirroring and eliminating the network bottlenecks associated with transcontinental links, the distributed system architecture is a key factor for low latency in multimedia data visualization and fast data delivery.

Currently SPIDR contains the following thematic data sections:

- Geomagnetic and solar indices;
- Solar radiation;
- Interplanetary magnetic field;
- Geomagnetic field;
- Ionosphere;
- X-rays, proton, alpha-particle, and electron flux.

SPIDR offers unified means for selecting, visualizing and processing data. Its main strength lies in integration of multiple heterogeneous data sources. SPIDR may work as a web-portal and as an entry point for other applications. This guide deals with SPIDR as a web-portal. If you want to connect to SPIDR from your own programs, please refer to "*SPIDR Web-services Guide*".

Getting started

This page is a starting point for your SPIDR experience. It consists of several areas (see Figure 1).

"SPIDR Mission" area provides a brief description of SPIDR project. If you are using SPIDR for the first time, we recommend you to read this short description. It will help you to understand SPIDR goals and features.

"SPIDR News" area is a list of recent news, related to SPIDR development and maintenance. Its main aim is to notify the users of updates and changes to SPIDR, which is being constantly expanded and improved. It's a good idea to browse through the news once in a while to keep up with the development progress.

"Select SPIDR Mirror Site" area is an interactive map, which allows you to select one of the available SPIDR sites. When you click on a site's name, you will be redirected to that site.

"Documentation" area contains links to SPIDR documentation. There is an on-line usage guide and a brief description of data available through SPIDR.

To start using SPIDR you need to enter your login and password in **"SPIDR Members login"** area. If you don't have an account yet, you can either register as a new user (by following "Register >>" link in **"Registration"** area) or use the default "guest" account (by following "Guest login >>" link in **"SPIDR Guest login"** area). As a guest, you can browse and select data, however you must login as a registered user to download data. Once you are logged in you will be taken to the home page.

Figure 1 – Welcome page

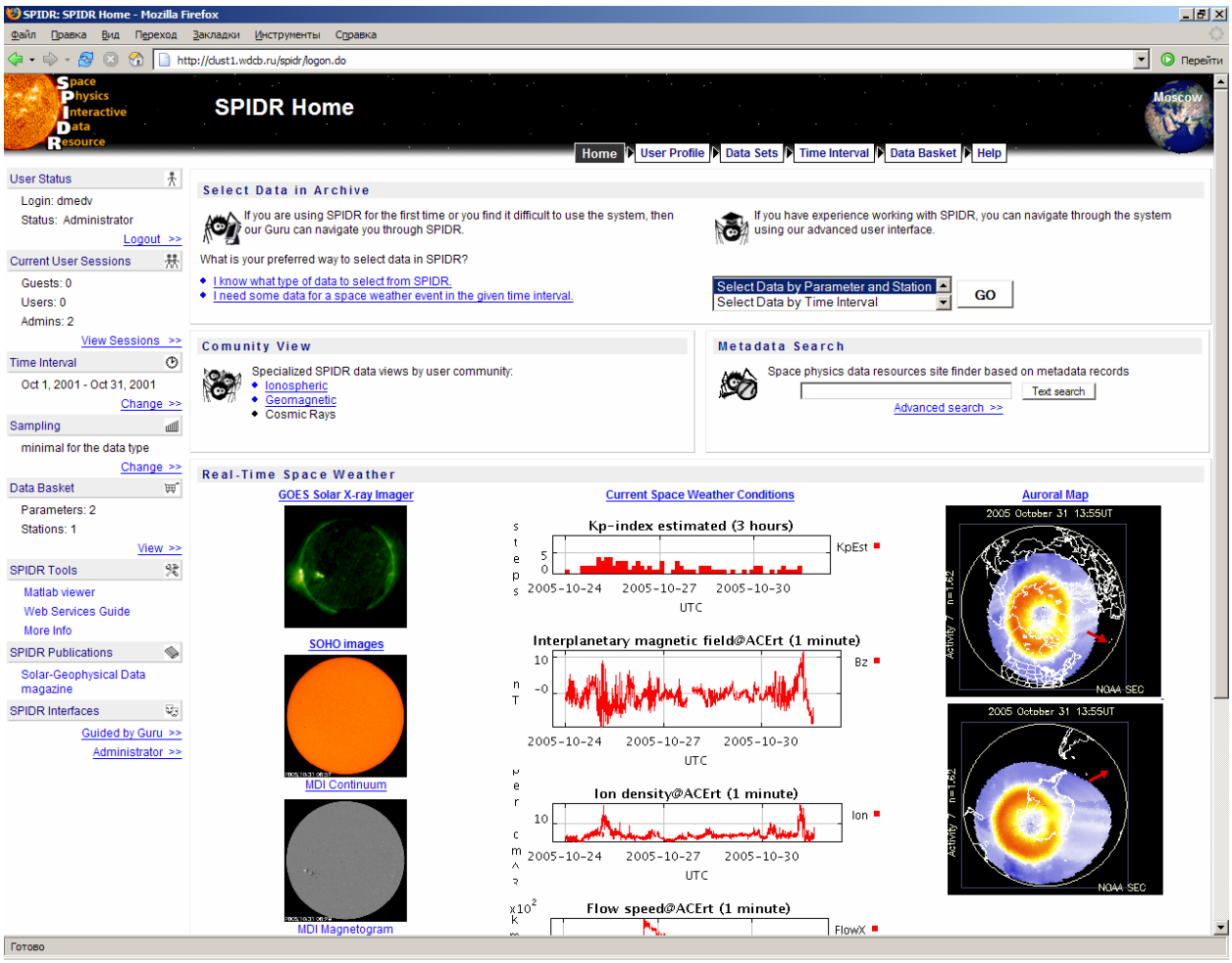

Figure 2 – Home page

The home page (see Figure 2) provides access to different SPIDR settings and queries using a sophisticated system of links and menus. If you are new to SPIDR you can use a simplified wizard-like interface to get what you need from SPIDR. Follow the "Guided by Guru >>" link in the **"SPIDR Interfaces"** area to use the simplified interface.

The main menu, located at the top of the page, is designed to provide quick access to some of the most important SPIDR sections. Most of its functions will be described in *Working with data sets* section.

Your user status is shown in the **"User status"** area. You can end your SPIDR session by clicking on the "Logout >>" link. If you need to change your personal information, such as name and password, select "User Profile" item in the main menu.

The **"SPIDR Tools"** area provides additional information on SPIDR extensions, such as Matlab integration and web-services.

The **"SPIDR Publications"** area contains links to SPIDR-related publications.

The **"Real-Time Space Weather"** area contains a summary of current space weather conditions, automatically obtained from various SPIDR data sources. All these images and data can be requested independently along with other SPIDR data. See *Working with data sets* for more details.

The **"Metadata Search"** allows the users to search in a database, containing XML descriptions of various data sources:

1) SPIDR data sources.
2) Mixed data sources.
3) Non-SPIDR data sources.

Working with data sets

The best way to start working with data is to set a time interval, which your data queries will be restricted to. It can be done by selecting the “Time Interval” item in the main menu, or by clicking on the “Change >>” link in the **“Time Interval”** area. The “Time Interval and Sampling” page (see Figure 3) also allows setting data sampling interval, from 1 minute to 1 year. It is usually sufficient to select “minimal for the data type” sampling, which will adjust sampling value automatically, according to the selected data source. After the time interval and sampling have been set, you should select “Update time settings and select data set” in the list box and press the “GO” button. This will bring you to the “Data Categories and Sets” page. Another option is to select “Clear time settings” in the list box, which will reset the current settings.

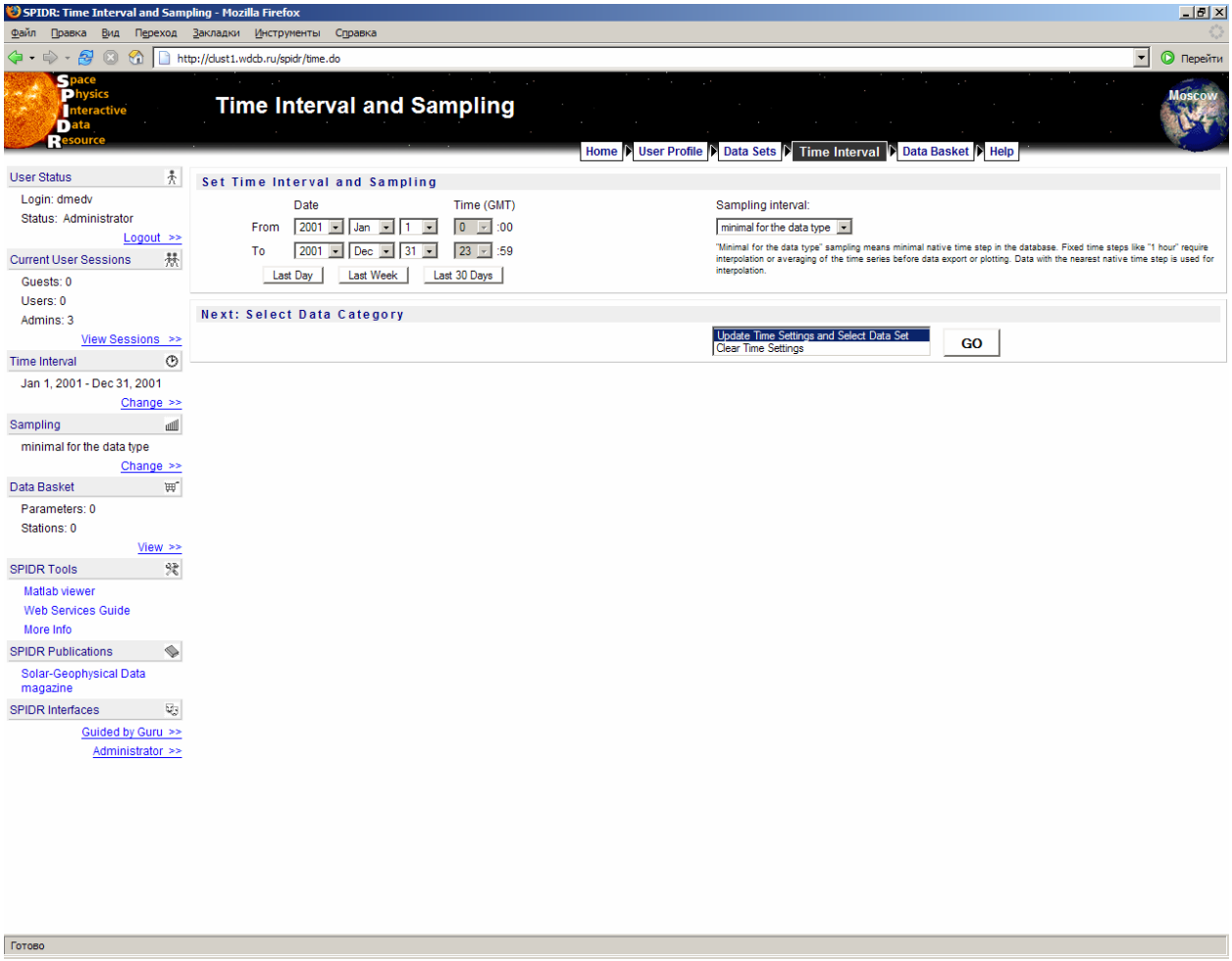

Figure 3 – Changing time interval and sampling

The “Data Categories and Sets” page allows you to select a data set for your queries. The list of SPIDR data sets on this page is filtered for data available within the selected time interval by default. The “Show All Datasets” option will display all data sets, including those that have no data for the selected time interval. Clicking on an “Info” icon will show a help page, briefly describing the data, stored in the corresponding data set. A “Metadata” icon will show a detailed, formal description of the data set. It can be obtained as an XML document in FGDC format. An “FTP” icon will redirect you to an FTP archive with related data, if one is available. To select a data set just click on its name. This will bring you to the “Detailed Data Request” page (see Figure 4).

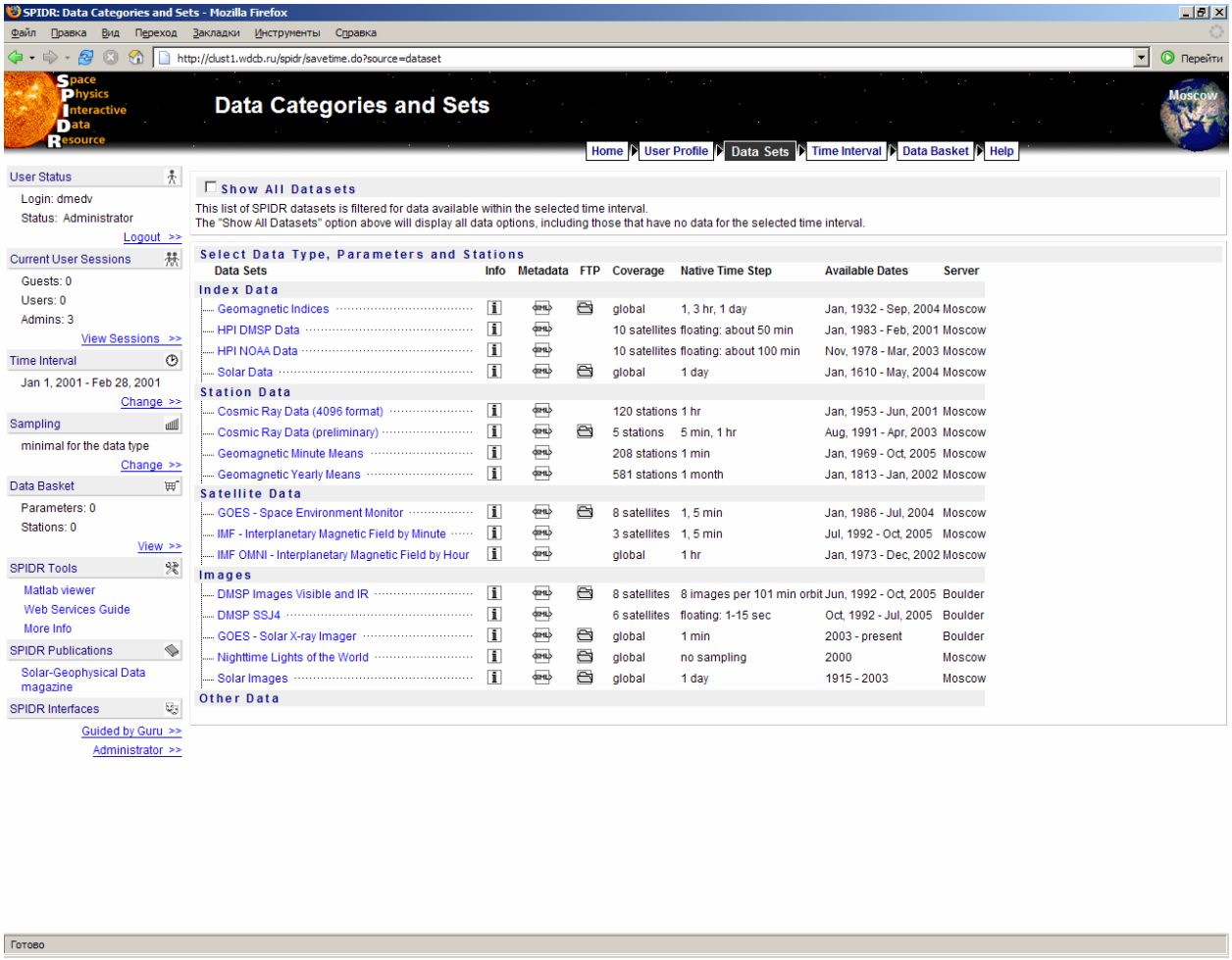

Figure 4 – Data Categories and Sets

Typically, a detailed data request involves selecting one or more stations and parameters (see Figure 5). Once they are selected you can choose one of the following options in the list box:

1) Plot time series as GIF images. This option will plot the selected parameters, and place the plots on the web-page as GIF images.
2) Plot time series with Java applet. This option works much the same, except that it will use Java applets instead of static GIF images. Java applets are usually faster, and they provide zooming capabilities.
3) Detailed inventory. This option will produce a detailed summary of available data that fulfills your request.
4) Download selected data. Use this option to download the data at once, without visualizing it. Use the “Data export format” combo-box to specify the output format. The commonly used formats are: ASCII, XML, Matlab. Some data sets can be exported in specific formats (such as WDC format for geomagnetic data);
5) Add selected data to basket. This option will add the data to your personal basket. See *Working with basket* for more details.

We’d like to emphasize that the interface, shown in figure … is just an example. User interfaces may differ greatly for different data sets. For example, there may be data sets, not bounded to stations at all. We will not give here a full description of all possible interface types, because SPIDR is evolving and new data sets with specific user interfaces may appear. However,

the web-pages usually contain all the necessary comments and guidelines, so you must be able to figure out how to formulate your request.

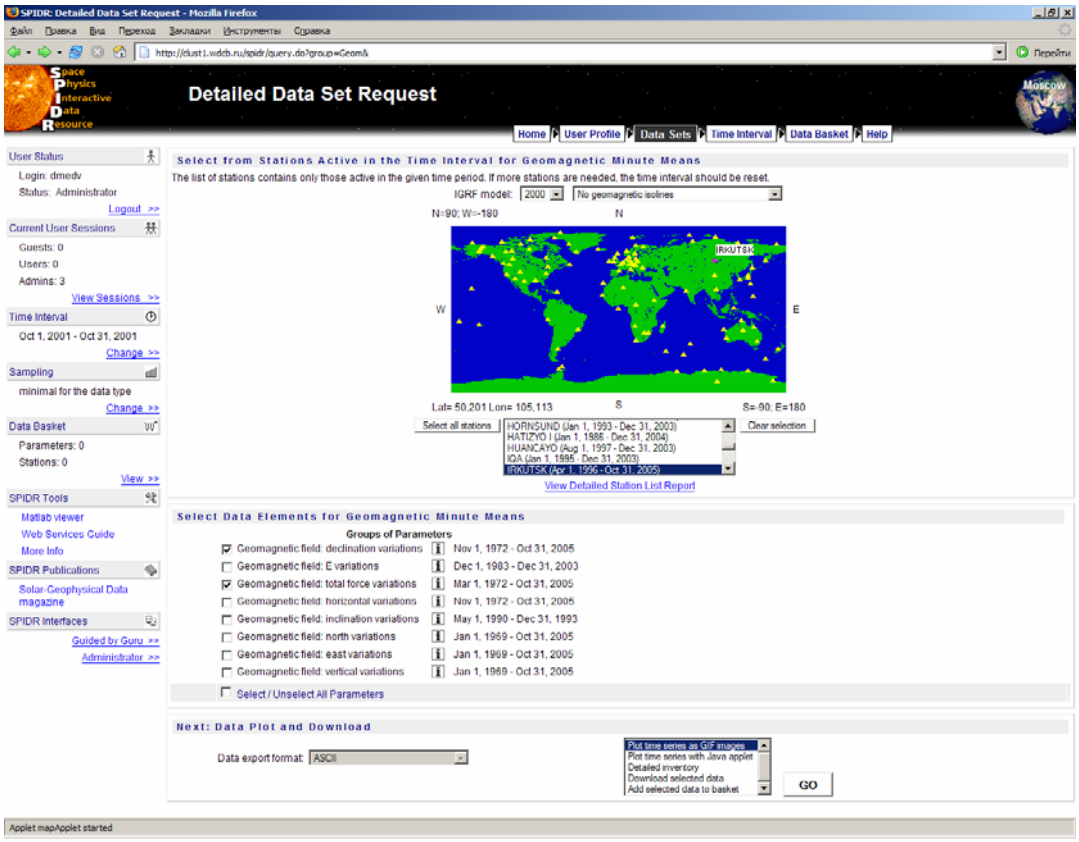

Figure 5 – Selecting stations and parameters

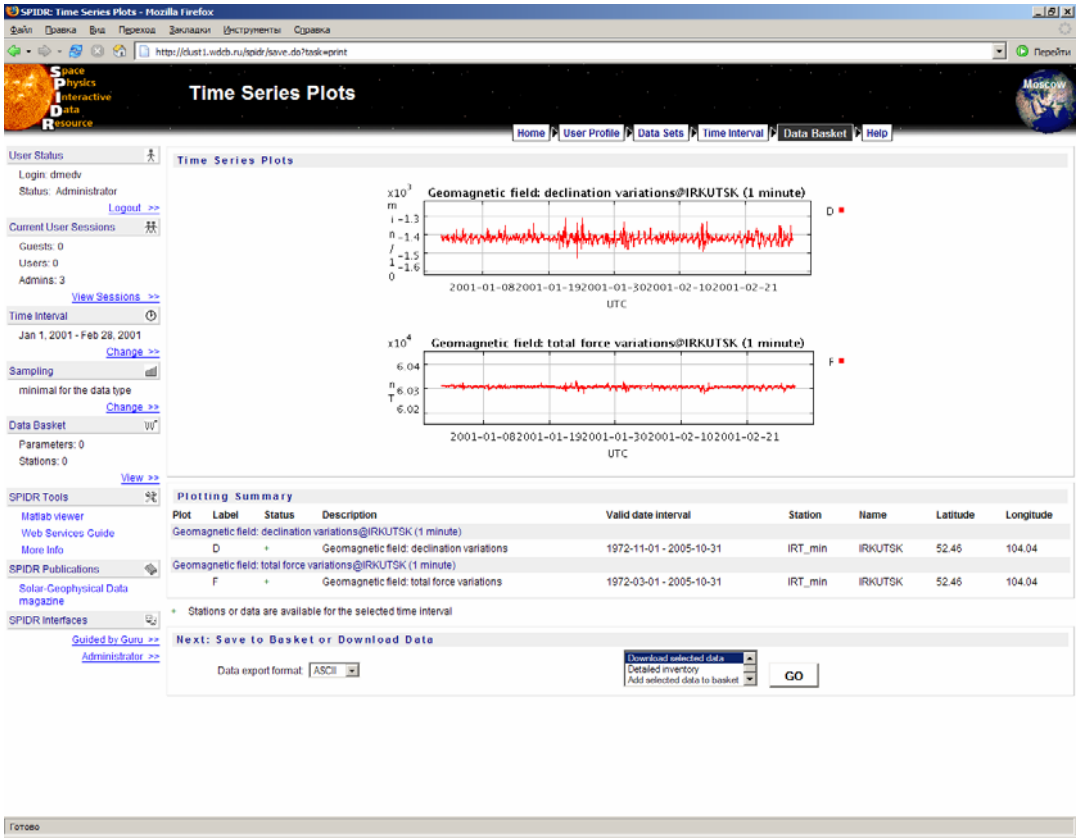

Figure 6 – Time series plots

Community views may be used to get a problem-specific representation of SPIDR data (see Figure 7). Currently there are two community views available: geomagnetic and ionospheric. To switch to a certain community view, select the appropriate link in the **"Community View"** area on the home page. Community views show related data sets and common tasks on a single web-page, thus making navigation easier.

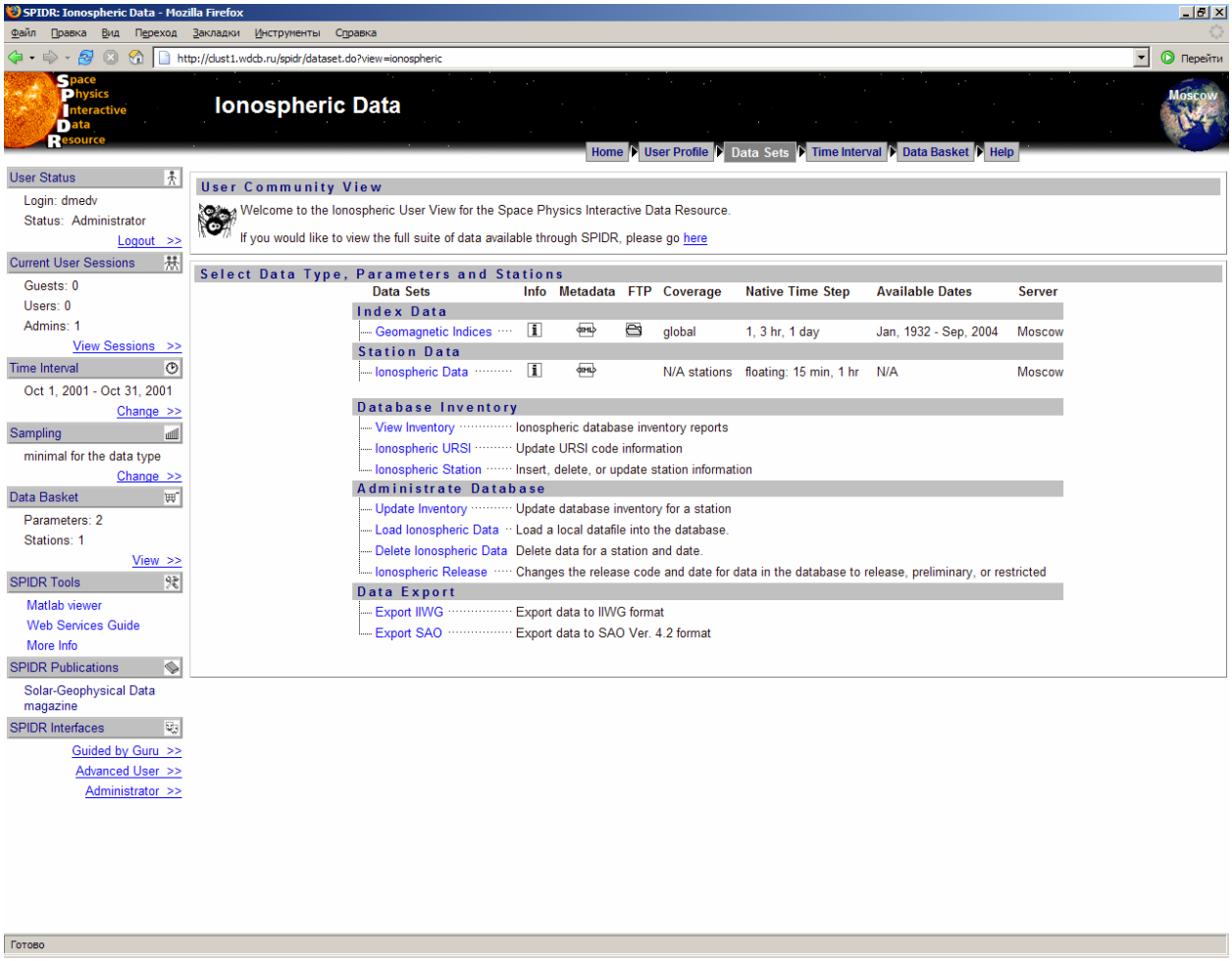

Figure 7 – Community view for ionospheric data

Working with data basket

Data basket is a collection of different space weather parameters selected from different databases for the same time interval. It's a convenient way to store frequently used data. Your data basket contents are saved when you log out from SPIDR, and will be brought back to you when you log in again. With data basket contents you can do all the standard operations, described in the previous section:

1) Plot time series as GIF images.
2) Plot time series with Java applet.
3) Get detailed inventory.
4) Download selected data in various formats.

The user can also add or delete data from his personal basket.

Data basket contents can be viewed by selecting the "Data Basket" item in the main menu, or by clicking on the "View >>" link in the **"Data Basket"** area.

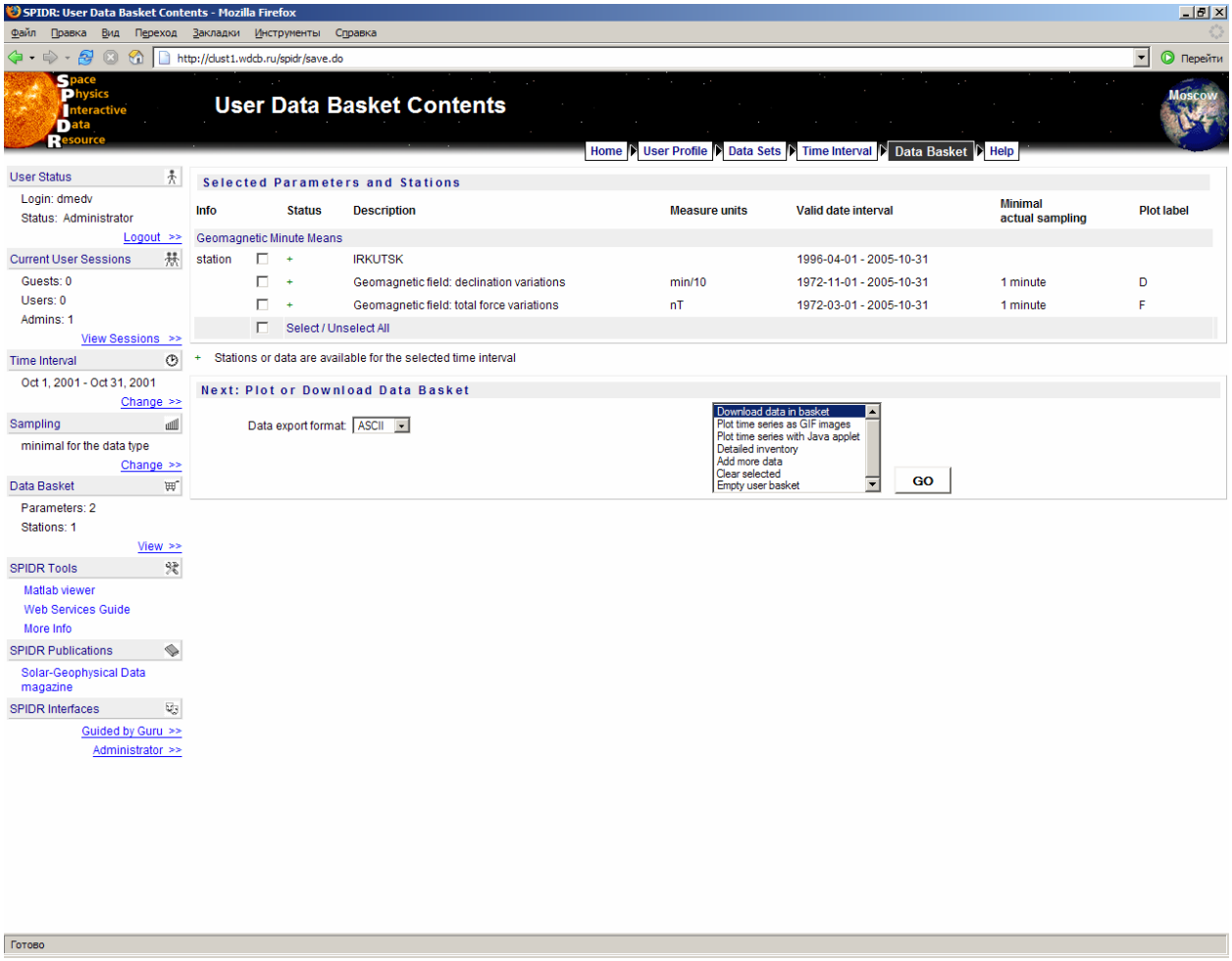

Figure 8 – User data basket contents